

Mem. Natn. Sci. Mus., Tokyo, (18), December 1, 1985

## Marine Isopod Crustaceans in the Coast of Toyama Bay\*

By

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In order to investigate the isopod crustacean fauna of the coast of Toyama Bay, I was engaged in the study of isopod crustaceans along the coast of Toyama Bay, from Miyazaki in Toyama Prefecture to Mitsuke in Ishikawa Prefecture, during the survey programme "Natural History of the Hokuriku and San-in Districts" of the National Science Museum, Tokyo (Fig. 1). Adding to the result obtained in the present survey, I examined the isopod specimens deposited at the Toyama Science Museum. This report deals with 34 species of 29 genera, including 4 new species of the genera, *Mesanthura*, *Paridotea*, *Synidotea* and *Ianiropsis*.

Before going further, I would like to express my sincere gratitude to Dr. Masatsune TAKEDA of the National Science Museum, Tokyo for his encouragement and his cordial help. Thanks are also due to Messers. Kiyoshi KAMIGISHI, Chikara SHINYA, Suguru FURUKAWA and Miss Tomoko SHOSAKU for their help in collecting.

## Order Isopoda

## Suborder Anthuridea

## Family Anthuridae

Genus *Mesanthura* BARNARD, 1914*Mesanthura atrata* n. sp.

(Fig. 2)

*Material examined.* Nakadomari, Himi-shi, Toyama Pref., 1♂ (holotype, 8.9 mm in body length), 1 m in depth, rocky shore, coll. N. NUNOMURA, July 1, 1984. Holotype is deposited at the National Science Museum, Tokyo (NSMT-Cr 9112).

*Description.* Black body except all the appendages and both antennae. Body elongated, 15.4 times as long as wide except both antennae. Rostral projection of cephalon slightly projected as forward as anterolateral angles.

No dorsal pit. Mutual length of pereopodal somites I–VI subequal, but the last somite is about 2/3 times as long as the 6th somite. Pleon as long as the 6th pleopodal somite and

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\* Contributions from the Toyama Science Museum, No. 52.\*\* Toyama Science Museum  
富山市科学文化センター

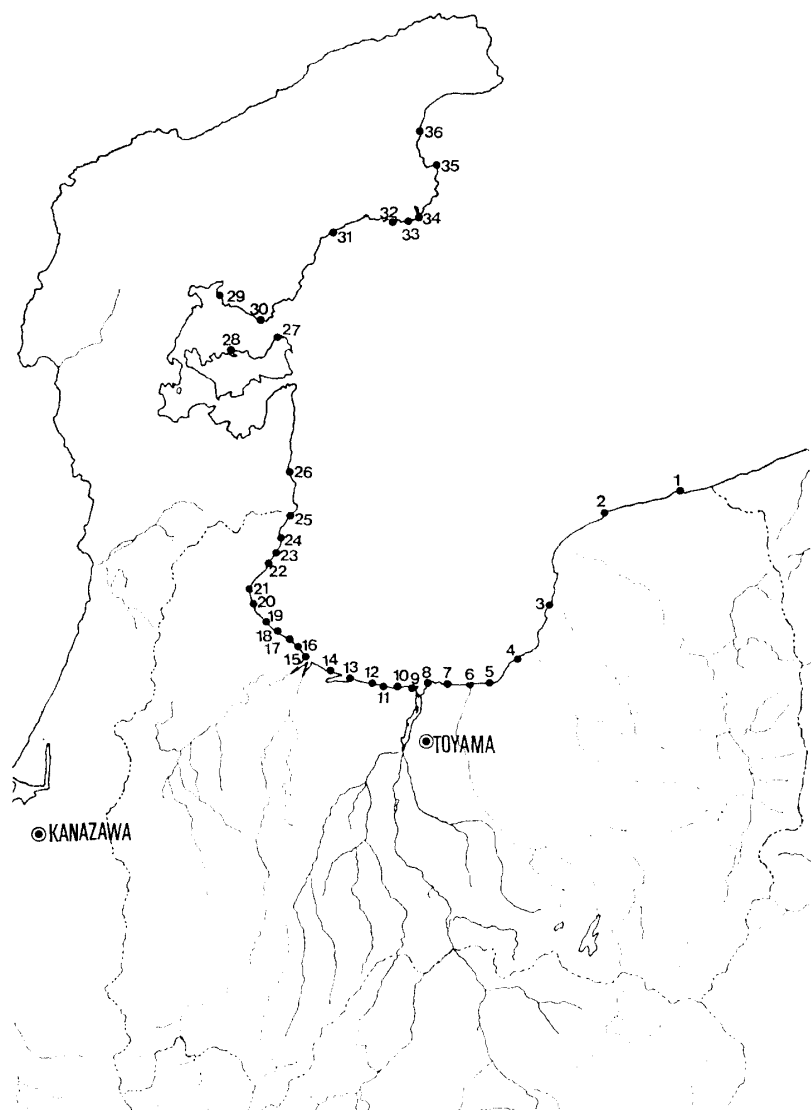


Fig. 1. Sampling sites. Substrata are given in parentheses after place name (B, boulder, C, concrete, M, mud, R, rock, S, sand).

1. Miyazaki (P, R, C); 2. Yoshihara (C); 3. Kyoden (C, B); 4. Takatsuka (C, S, B); 5. Mizuhashi (B, C); 6. mouth of Joganji river (B, S, C); 7. Hamakurosaki (S, C); 8. Iwase (S, C); 9. Yokota (S, C, B); 10. Uchiide (S, C, B); 11. Ashiarai (C, S); 12. Ebie (S, C); 13. Horioka (C); 14. Shinminato fishing port (C); 15. Fushiki (C); 16. Kokubu (S, B, C); 17. Amaharashi (S, R, B); 18. Matsudae-hama (S); 19. Shimao (S); 20. Himi fishing port (C); 21. Ao (R, S); 22. Nakadomari (B, S, R); 23. Unami (S); 24. Kosakai and Oosakai (S, B, R); 25. Nakanami and Sugata (B, S, R, C); 26. Kurosaki (R); 27. Yatsugasaki and Kinoura (S); 28. Magari and Hakonano-irrie (B, M); 29. Iwaguruma (B); 30. Kagata saki (R); 31. Fujinami (R); 32. Hane (S); 33. Mawaki (R, B); 34. Ogi, Iwaki and Tsukumo Bay (M, R, C, S); 35. Akasaki (R, S); 36. Mitsuke (B, R, C).

each somite is separated by lateral part. Pleotelson is equally projected as backward as uropod.

Antenna I composed of 6 segments; 1st to 4th segments almost square; 5th segments 1.5 times as long as the 4th; terminal segment small with about 20 setae.

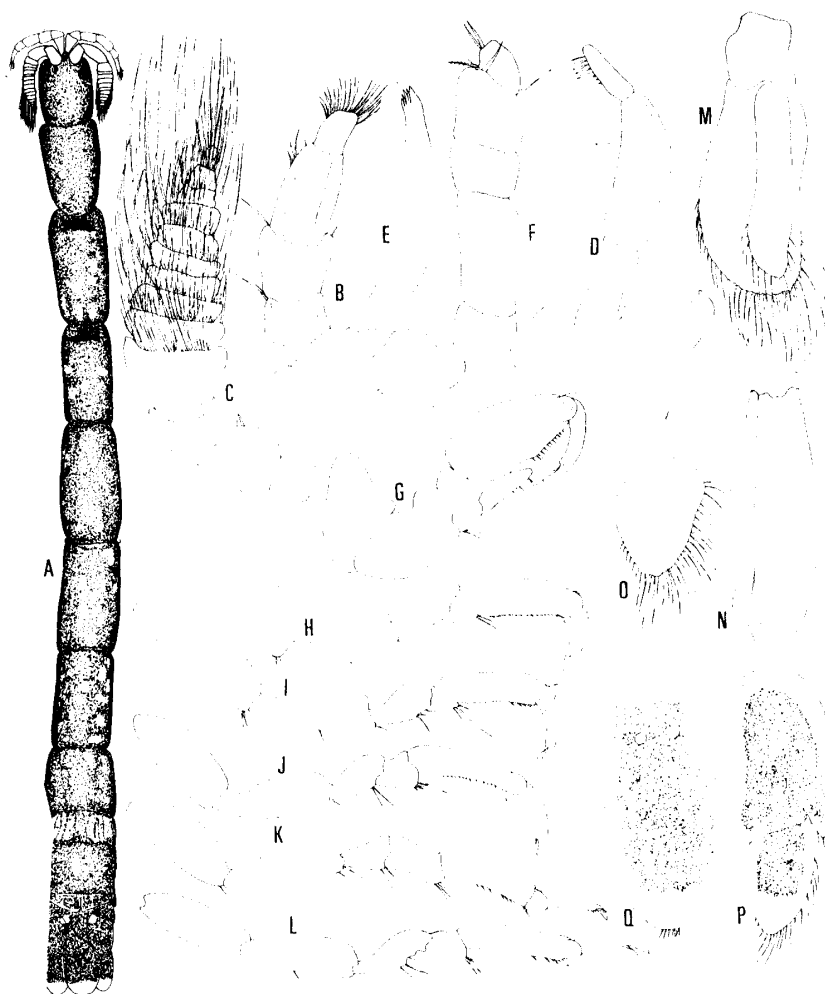


Fig. 2. *Mesanthura atrata* n. sp.

A. Dorsal view. B. Antenna I. C. Antenna II. D. Mandible. E. Maxilla I. F. Maxilliped. G-I. Peraeopods I-III. J-L. Peraeopods V-VII. M. Pleopod I. N. Endopod of pleopod II. O. Exopod of uropod. P. Endopod of uropod. Q. Pleotelson. (All: holotype male).

Antenna II (Fig. 2C) longer than the first and composed of 5 peduncular segments and 9 flagellar segments; the latter bearing many long setae.

Mandible (Fig. 2D) with a 3-segmented palp, 3rd segment with 5 long and 3 minute setae at inner distal part. Maxilla I (Fig. 2E) with 5 apical teeth. Maxilliped (Fig. 2F) with 4 free segments; 1st segment rectangular; 2nd and 3rd segments almost square; terminal segment semicircular.

Peraeopod I (Fig. 2G) subchelate; basis stout and triangular; ischium rectangular; merus trapezoidal; carpus narrow and triangular; propodus stout with a row of about 12 setae on inner margin; dactylus a little longer than those of the other peraeopods.

Peraeopods II-III (Fig. 2 H-I) similar in shape; basis and ischium oblong; merus rectangular; carpus triangular; propodus oblong.

Peraeopods IV-VII (Fig. 2 J-L) similar in shape; basis and ischium oblong; merus

and carpus rectangular; propodus oblong.

Pleopod I (Fig. 2 M); basis rectangular; endopod oblong with 15 setae around the margin; exopod lanceolate with 28 setae around the margin. Pleopod II (Fig. 2 N) in male with a stylet, whose tip is bent slightly inwards and slightly swollen distally.

Exopod of uropod (Fig. 2 P) composed of rectangular basal segment and round terminal segment. Pleotelson lanceolate with a pair of statocysts near the basal part and with 7 setae at the tip.

*Remarks.* The present new species is most closely allied to *M. nigrodorsalis* NUNOMURA described from western Japan, but separated from it in the following features: (1) black coloured ventral side of body, (2) bigger eyes, (3) shape of mandible, (4) shape of both rami of uropod, (5) protruded rostral projection, and (6) shape of 6th pleonal somite.

### Family Paranthuridae

Genus *Paranthura* BATE et WESTWOOD, 1868

*Paranthura japonica* RICHARDSON, 1909

*Paranthura japonica* RICHARDSON, 1909; GURJANOVA, 1936; SHIINO, 1965; KUSSAKIN, 1974; NUNOMURA, 1976, 1977.

*Material examined.* Miyazaki (see Fig. 1 for collection localities), 6♀♀ 2 young, coll. N. NUNOMURA, Sept. 7, 1982; Hamakurosaki, 15♀♀, coll. N. NUNOMURA, Sept. 19, 1980; Iwase, 1♀, coll. H. NAMBU, July 21, 1982; Yokata, 2♀♀, coll. T. HAYASHI, Aug. 18, 1980; Yokata, 2♀♀, 1 young, coll. N. NUNOMURA, Sep. 8, 1982; Uchiide, 2♀♀, coll. N. NUNOMURA, May 19, 1982; Uchiide, 1 young, coll. N. NUNOMURA, July 3, 1984; Ashiarai, 1♀, coll. H. KURODA, Aug. 17, 1984; Amaharashi, 2♀♀, coll. N. NUNOMURA, Aug. 19, 1976; Amaharashi, 7♀♀, coll. N. NUNOMURA, Zug. 2, 1978; Unami, 1♀, coll. N. HORII, Aug. 18, 1984; Yatsugasaki, 1♀, coll. N. NUNOMURA, June 30, 1984; Kinoura, 1♀, coll. N. NUNOMURA, June 29, 1984; Magari, 2♀♀, coll. N. NUNOMURA, June 30, 1984; Iwaguruma, 1♀, coll. N. NUNOMURA, June 25, 1984; Mitsuke, 3♀♀, coll. N. NUNOMURA, June 28, 1984.

### Suborder Valvifera

### Family Idoteidae

Genus *Idotea* FABRICIUS, 1799

*Idotea metallica* BOSC, 1803

*Idotea metallica* BOSC, 1803; MIERS, 1883; HANSEN, 1887-88, 1916; DOLLFUS, 1895; RICHARDSON, 1900; THIELEMANN, 1910; NORDENSTAM, 1933; GURJANOVA, 1936; DOE and MENZIES, 1957; HUELEY, 1961; SHIINO, 1965.

*Material examined.* Off Ogi (137°13E': 27°13N'), from floating weeds, 10♂♂, 40♀♀, coll. K. IKEHARA, July 25, 1982.

Genus *Euidotea* COLLINGE, 1917

*Euidotea ocellata* NUNOMURA, 1984

*Euidotea ocellata* NUNOMURA, 1984.

*Material examined.* Off Mawaki, 2♂♂, coll. K. IKEHARA, Aug. 5, 1982.

Genus *Synisoma* COLLINGE, 1917

*Synisoma pacificum* NUNOMURA, 1974

*Synisoma pacificum* NUNOMURA, 1974.

*Material examined.* Off Ogi, 1♂, from floating weeds, coll. N. NUNOMURA, June 26, 1984.

Genus *Paridotea* STEBBING, 1893

*Paridotea robusta* n. sp.

(Figs. 3-4)

*Material examined.* Yoshitsune-iwa, Amaharashi, 1♂ (holotype, 38.8 mm in body length), coll. N. NUNOMURA, May 11, 1982. Amaharashi, 1♂ (paratype, 36.0 mm in body length), coll. N. NUNOMURA, Apr. 7, 1981. Type series is deposited as follows: holotype (TOYA-Cr-4350) at the Toyama Science Museum and a paratype (NSMT-Cr 9115) at the National Science Museum, Tokyo.

*Description.* Body flattened, 3.5 times as long as wide. Cephalon almost rectangular; anterior margin straight; posterior margin slightly convex. Each pereopod somite emargi-

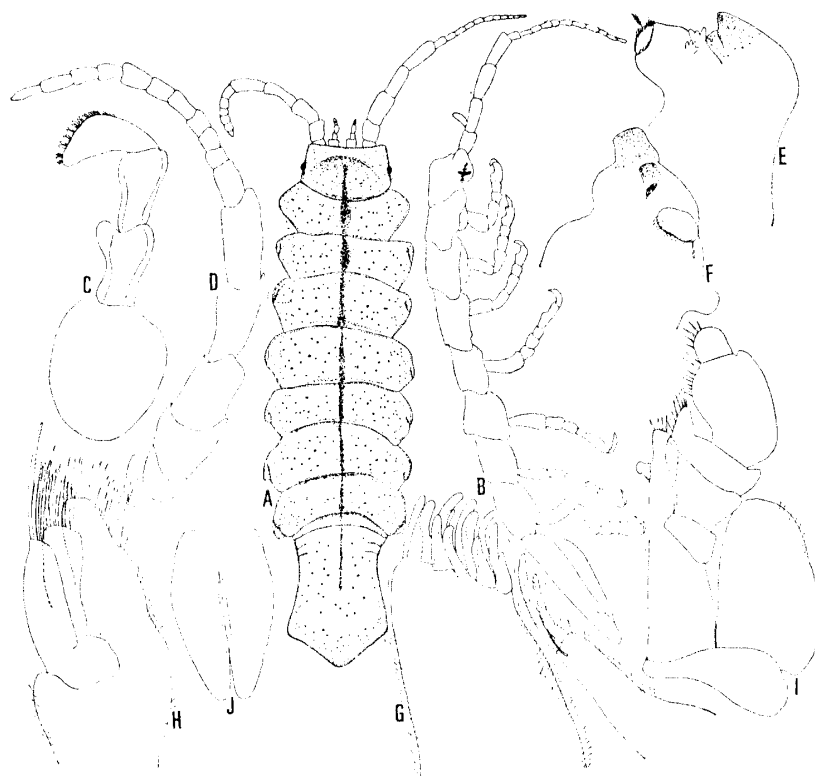


Fig. 3. *Paridotea robusta* n. sp.

A. Dorsal view. B. Lateral view. C. Antenna I. D. Antenna II. E. Right mandible. F. Left mandible. G. Maxilla I. H. Maxilla II. I. Maxilliped. J. Penes. (All: holotype male).

nated; coxal plates II–VII distinct, but small. Pleotelson rectangular with triangular distal part and with a complete and 2 incomplete sutures. Eyes rather small and longitudinally oblong and situated laterally; each composed of 200 ommatidia.

Antenna I (Fig. 3 C) 4-segmented; 1st segment big and round; 2nd and 3rd segments rectangular; 4th segment petal-shaped with 10 pairs of aesthetascs on inner distal margin.

Antenna II (Fig. 3 D), reaching 3rd peraeonal somite; peduncle 5-segmented; flagellum 11-segmented in right antenna II, but only 6 in the left; the latter would be a kind of malformation.

Right mandible (Fig. 3 E), pars incisiva 2-toothed; lacinia mobilis not chitinized and 3-toothed; processus molaris normal. Left mandible (Fig. 3 F); pars incisiva single-toothed; lacinia mobilis also single-toothed; a penicil behind lacinia mobilis; processus molaris normal. Maxilla I (Fig. 3 G); outer lobe with 2 setae and a plumose seta at the tip; inner lobe with 12 teeth at the tip. Maxilla II (Fig. 3 H); outer lobe subequal in length; outer ramus bearing 6 setae and inner ramus bearing 8 setae at the tip; inner lobe somewhat longer than the other rami of outer lobe, with 14 setae and 2 longer plumose setae. Maxilliped (Fig. 3 I): epipodite tongue-shaped; endite reaching 3rd palpal segment, bearing 4 setae at the distal margin. Palp 5-segmented; 1st segment short; 2nd segment trapezoidal; 3rd segment short with a bigger inner projection and a small projection; 4th segment lanceolate; terminal segment semicircular and small.

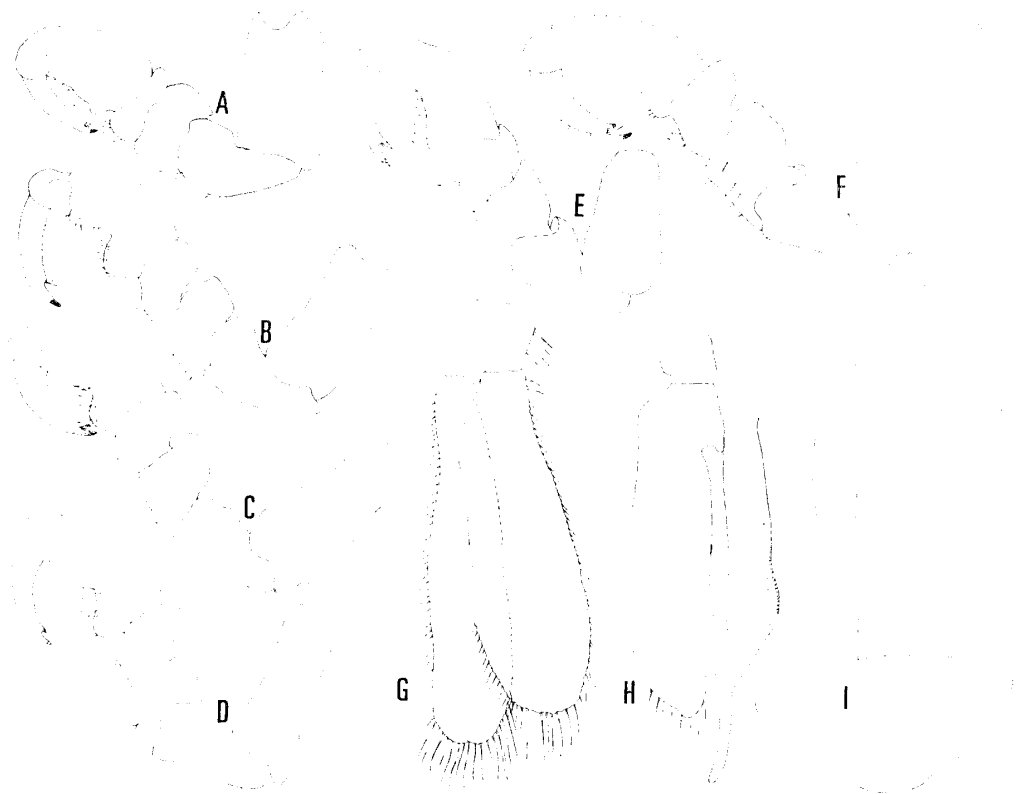


Fig. 4. *Paridotea robusta* n. sp.

A–E, Peraeopods I–V. F, Peraeopod VII. G, Pleopod I. H, Endopod of pleopod II. I, Uropod. (All: holotype male).

Peraeopod I (Fig. 4A); basis and ischium rectangular; merus short, but rather wide; carpus very short; propodus rectangular with a small protrusion at inner basal part.

Peraeopods II–VII (Fig. 4 B–F); basis and ischium oblong; merus and carpus square; propodus hook-shaped, having a big protrusion at inner basal part.

Pennes (Fig. 3 J) paired, but rather short.

Pleopod II in male (Fig. 4 H); endopod oblong with 8 setae on apical margin and with a long stylet having 20 denticles near the tip.

Uropod (Fig. 4 I) big, basal segment rectangular, terminal segment triangular.

*Remarks.* As far as I know, the genus *Paridotea* is known by 5 species from southern part of Africa, southern part of Australia and southern part of South America. The new species described here seems to be peculiar in shape and geological distribution. This species is separated from the other species of the genus by the following features: (1) wider body shape, (2) protruded pleotelson, (3) smaller coxae of peraeonal somites, and (4) less numerous flagellar segments of antenna II.

#### Genus *Synidotea* HARGER, 1878

#### *Synidotea laevidorsalis* (MIERS, 1883)

*Edotea hirtipes* var. *laevidorsalis* MIERS, 1883.

*Synidotea laevidorsalis* BENEDICT 1898; THIELEMANN, 1910; SHIINO, 1965.

*Material examined.* Mizuhashi, 1♂, 12♀♀, coll. H. KURODA; Hamakurosaki, 4♂♂, 7♀♀, coll. Toyama Fish. Exp. Sta., Aug. 6, 1979; Hamakurosaki, 2♀♀, coll. N. NUNOMURA, Sep. 19, 1980; Uchiide, 1♀, coll. N. NUNOMURA, June 3, 1981; Ao, 3♂♂, 4♀♀, coll. Toyama Fish. Exp. Sta., Aug. 21, 1979; Kinoura, 2♂♂, 12♀♀, coll. N. NUNOMURA, June 29, 1984.

#### *Synidotea nipponensis* n. sp.

(Figs. 5–6)

*Material examined.* Amaharashi, 4♂♂ (1♂, holotype, 14.5 mm in body length, 3♂♂, paratypes, 12.1–14.7 mm in body length) and 6♀♀ (1♀, allotype, 12.8 mm in body length and 5♀♀, 9.0–10.3 mm in body length) coll. N. NUNOMURA, Aug. 2, 1978; Oosakai, 1ex, coll. N. NUNOMURA, Sep. 6, 1982; Unami, 3exs, coll. N. NUNOMURA, Aug. 18, 1984; Kinoura, 1 ex, coll. N. NUNOMURA, June 29, 1984. Type series is deposited as follows: holotype (TOYA-Cr-4535), allotype (TOYA-Cr-4536), and 4 paratypes (TOYA-Cr 4537~4540) at the Toyama Science Museum, and 4 paratypes (NSMT-Cr 9116) at the National Science Museum, Tokyo.

*Description.* Body flattened, about 3.3 times as long as wide. Anterior margin of cephalon straight and posterior margin semicircular. Anterior half of peraeon remarkably emarginated, but posterior half is almost parallel. Pleotelson with an incomplete suture and a small dent at the end. Colour dull yellow or greenish grey. Eyes rather big, each eye composed of about 700 ommatidia.

Antenna I (Fig. 6 B) composed of 4 segments; 1st to 3rd segments rectangular; terminal segment oblong with 9 pairs of aesthetascs on outer distal margin.

Antenna II (Fig. 6 A) reaching 5th peraeonal somite. Peduncle composed of 5 segments; 1st segment small; 2nd and 3rd segments rectangular; 4th and 5th segments oblong.

Flagellum composed of 23 segments.

Right mandible (Fig. 6 C); pars incisiva 3-toothed; lacinia mobilis not chitinized and with 2 teeth and a broad tooth; a small penicil behind lacinia mobilis; processus molaris normal. Left mandible (Fig. 6 D); pars incisiva 4-toothed; lacinia mobilis chitinized and 3-toothed; 3 penicils behind lacinia mobilis; processus molaris normal. Maxilla I (Fig. 6 E); inner lobe with 2 plumose setae at the tip; outer lobe with 10 teeth at the tip. Maxilla II (Fig. 6 F) each ramus of outer lobe with 10 setae; inner lobe somewhat broader than a ramus of outer lobe and with 10 setae. Maxilliped (Fig. 6 G) with a 3-segmented palp; 1st segment small; 2nd segment trapezoidal; 3rd segment big and round; endite rectangular with a coupling hook on inner margin.

Peraeopod I (Fig. 5 B); basis rectangular; ischium also rectangular, but a little shorter than basis; merus short; carpus short and triangular; propodus rather robust with a small protrusion on inner basal margin; dactylus rather long.

Peraeopods II–VI (Fig. 5 C–G) similar in shape; basis oblong; ischium rectangular; merus and carpus almost square; propodus rectangular but a little swollen innerwards; dactylus rather long.

Peraeopod VII (Fig. 5 H); basis and ischium oblong; merus and carpus almost square; propodus also oblong and as long as basis; dactylus rather short.

Penes (Fig. 6 I) single, small and pentagonal.

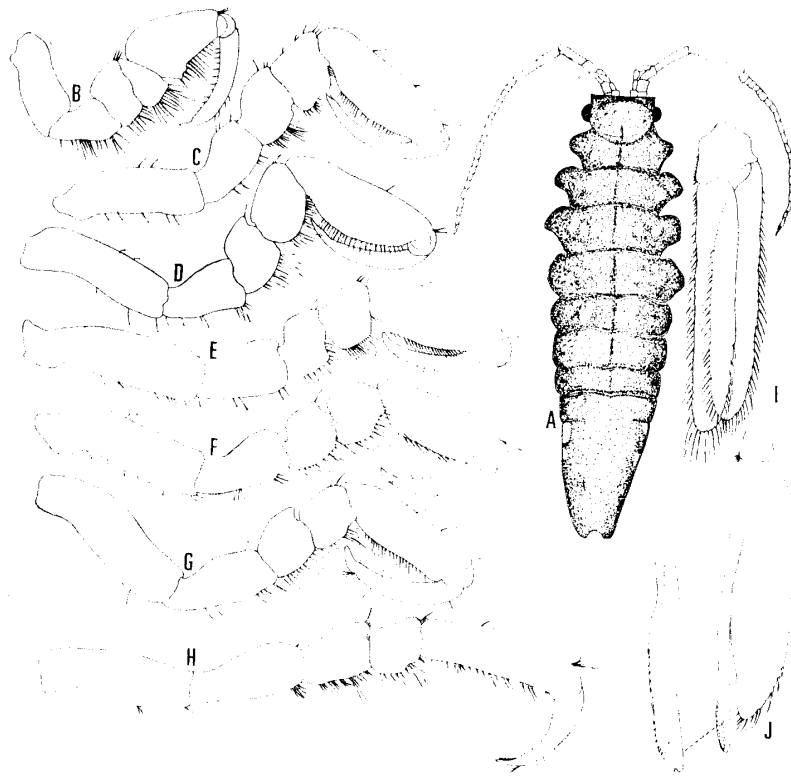


Fig. 5. *Synidotea nipponensis* n. sp.  
A. Dorsal view. B–H. Peraeopods I–VII. I. Pleopod I.  
J. Endopod of pleopod II. (All: holotype male).



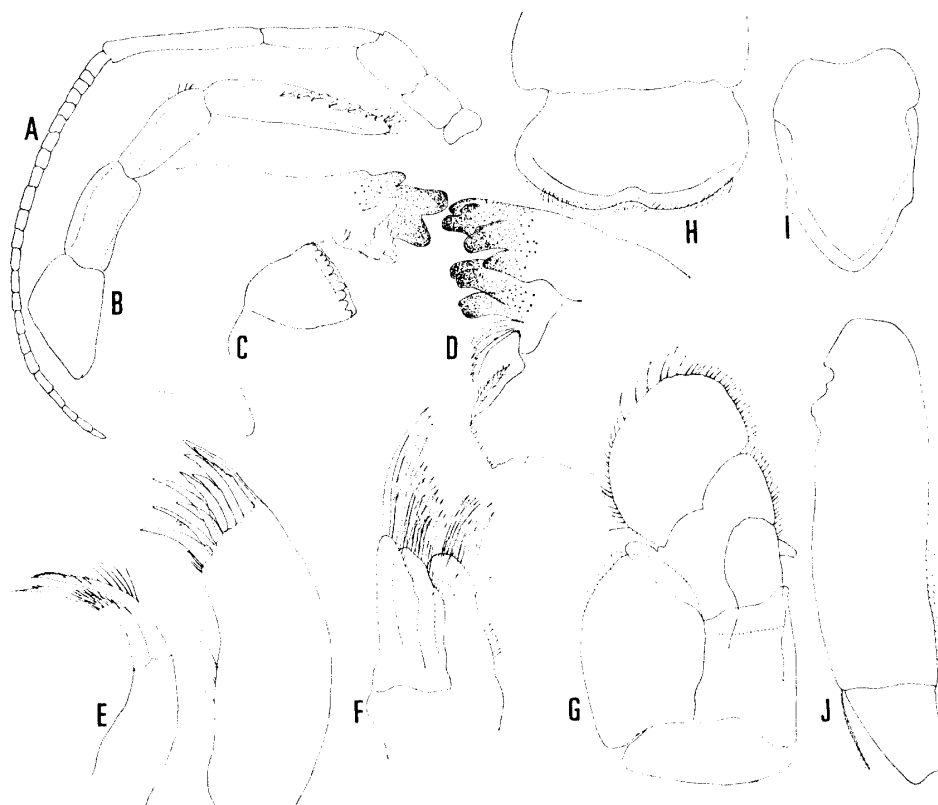


Fig. 6. *Synidotea nipponensis* n. sp.

A. Antenna II. B. Antenna I. C. Right mandible. D. Left mandible.  
E. Maxilla I. F. Maxilla II. G. Maxilliped. H. Labrum. I. Pennes.  
J. Uropod. (All: holotype male).

Pleopod II in male (Fig. 5 J) with a long stylet, whose tip is a little swollen and bearing many small denticles.

Uropod (Fig. 6 J); basal segment rectangular and rather long; terminal segment small and trapezoidal; a long plumose seta between 2 segments.

**Remarks:** The present new species is most closely allied to *S. hikigawaensis* NUNOMURA originally reported from Kii Peninsula, Pacific coast of central Japan, but separated from it in the following features: (1) slenderer body shape, (2) shape of peraeonal somite, (3) more numerous ommatidia of eyes, (4) shape of both mandibles, (5) more numerous setae on outer lobe of maxilla I, (6) less numerous setae of maxilla II, and (7) longer peraeopods.

The present new species is also allied to *S. harfordi* BENEDICT reported from the Pacific coast of U.S.A. and Mexico and also from the Japan Sea, but separated from it in the following features: (1) emarginations of peraeonal somites, (2) more numerous teeth on apical part of maxilla I, (3) shorter outer ramus of maxilla II, (4) less numerous segments of flagellum of antenna II and, (5) flat anterior margin of cephalon.

#### Genus *Cleantis* DANA, 1849

#### *Cleantis planicauda* BENEDICT, 1899

*Cleantis planicauda* BENEDICT in RICHARDSON, 1899: MOORE, 1902; SHIINO, 1965.

*Material examined.* off Hamakurosaki, 2♂♂, 2♀♀, coll. Toyama Fish. Exp. Sta., July 30–Aug. 10, 1979; Amaharashi, 1♂, coll. N. NUNOMURA, Aug. 3, 1978; Ao, 1♀, coll. Toyama Fish. Exp. Sta., Aug. 12, 1979.

Genus *Cleantiella* RICHARDSON, 1910

*Cleantiella isopus* (GRUBE, 1833)

*Cleantis isopus* GRUBE in MIERS, 1883; THIELEMANN, 1910; GURJANOVA, 1936; KUSSAKIN, 1956.

*Cleantiella isopus*: RICHARDSON 1909; NIERSTRASZ, 1941; SHIINO, 1965.

*Material examined.* Amaharashi, 3♀♀, coll. N. NUNOMURA, Aug. 20, 1976; Amaharashi, 2♀♀, coll. N. NUNOMURA, Aug. 2, 1978; Amaharashi, 2♀♀, coll. N. NUNOMURA, Aug. 3, 1978; Oosakai, 1♀, coll. N. NUNOMURA, Aug. 21, 1982; Kurosaki, 2♀♀, coll. N. NUNOMURA, Sep. 11, 1979; Kinoura, 1♀, coll. N. NUNOMURA, June 29, 1984.

*Cleantiella strasseni* (THIELEMANN, 1910)

*Cleantis strasseni* THIELEMANN, 1910.

*Cleantiella strasseni*: SHIINO, 1965.

*Material examined.* Kosakai, 1♂, coll. H. NAMBU, Nov. 11, 1983.

Suborder Asellota

Family Janiridae

Genus *Ianiropsis* SARS, 1899

*Ianiropsis notoensis* n. sp.

(Figs. 7–8)

*Material examined.* Magari, Notojima-machi, Ishikawa Pref., 2♂♂ (1♂, holotype, 3.0 mm in body length and 1♂, paratype, 2.1 mm in body length) and 1♀ (allotype, 2.9 mm in body length) coll. N. NUNOMURA, June 30, 1984.

Type series is deposited as follows: Holotype (NSMT-Cr 9113) and allotype (NSMT-Cr 9114) at the National Science Museum, and a paratype (TOYA-Cr-4351) at the Toyama Science Museum.

*Description.* Body flattened, elliptical, 3.3 times as long as wide. Cephalon rectangular, anterior margin straight. Each peraeonal somite rectangular. Coxal plates of peraeonal somite only partly visible in dorsal view. Pleotelson round with 4 pairs of small dents. Eyes reniform and rather big, each composed of 42 ommatidia.

Antenna I (Fig. 8 A) short, reaching the medial part of 1st peraeonal somite. Peduncle is 2-segmented; 1st segment broad; 2nd segment square and 0.3 times as long as the first. Flagellum composed of 13 segments.

Antenna II (Fig. 8 B) pretty long, reaching medial part of 5th peraeonal somite. Peduncle composed of 5 segments and flagellum composed of 23 segments.

Right mandible (Fig. 8 D); pars incisiva with 4 teeth; lacinia mobilis absent; 7 spine rows behind pars incisiva. Left mandible (Fig. 8 C); pars incisiva with 2 teeth; lacinia mobilis provided with 4 teeth, 5 spine rows behind lacinia mobilis; processus molaris of

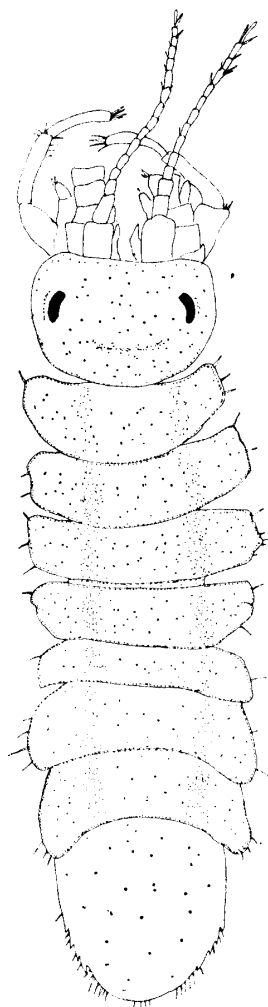


Fig. 7. *Ianiropsis notoensis* n. sp., holotype. Dorsal view.



Fig. 8. *Ianiropsis notoensis* n. sp.

A. Antenna I. B. Antenna II. C. Left mandible. D. Apical part of right mandible. E. Outer lobe of maxilla I. F. Maxilla II. G. Maxilliped. H. Peraeopod I. I. Peraeopod VII. J. Pleopod I. K. Pleopod II. L. Uropod. (A, C–K: holotype male; B and L: paratype).

both sides normal. Palp is 3-segmented; 1st and 2nd segments rectangular; terminal segment also rectangular with 11 apical setae.

Maxilla I (Fig. 8 E) normal; outer lobe with 8 strong pectinate spines; inner lobe with 3 plumose setae.

Maxilla II (Fig. 8 F) normal; outer lobe subequal in length and with 4 pectinate setae; inner lobe almost as long as the ones and bears many apical and marginal setae.

Maxilliped (Fig. 8 G); anterior margin of endite with 5–6 setae and a coupling hook on lateral margin. Palp is 5-segmented and very long; 1st segment short; 2nd segment remarkably broad and square; 3rd segment rectangular; 4th segment oblong; 5th segment long and with 5 apical setae.

All the pereopods (Fig. 8 H–I) similar in shape; basis oblong about 7 times as long as wide; ischium also oblong, but somewhat shorter than basis; merus elongated triangular; carpus oblong and as long as ischium; propodus almost as long as carpus, but narrower than carpus; dactylus bifid and with a small protuberance on the distal part of base and with a

small protuberance on the inner side of outer claw.

Pleopod I in male (Preoperculum) (Fig. 8 J) narrowing at the central part and widening at its extremity; the distal end is provided with 9–12 apical and 3 subapical setae.

Pleopod II in male (Fig. 8 K); sympod ellipse, the margin of which is naked; exopod pretty reduced; endopod long, extending the extremity of sympod, and narrowing towards the tip.

Uropod (Fig. 8 L) biramous, almost as long as the pleotelson; the endopod a little longer than the exopod.

*Remarks.* The present new species is most closely allied to *Ianiropsis longiantenna* THIELEMANN described from Japan (more detailed locality is unknown), but is separated from it in the following features: (1) less numerous flagellar segments of antenna II, (2) less protruded distal outer projection of pleopod I in male, (3) longer endopod of pleopod II in male, (4) longer and bigger palp of maxilliped and (5) longer peraeopods.

#### Suborder Flabellifera

#### Family Cirolanidae

#### Genus *Cirolana* LEACH, 1818

#### *Cirolana harfordi japonica* THIELEMANN, 1910

*Cirolana harfordi harfordi* LOCKINGTON *japonica* THIELEMANN, 1910.

*Cirolana harfordi japonica*: SHIINO, 1965; BRUCE & JONES, 1981.

*Material examined.* Takatsuka, 1♂, 1♀, coll. N. NUNOMURA, Sep. 21, 1983; Mouth of Joganji River, 1♀, coll. N. NUNOMURA, Sep. 5, 1980; Hamakurosaki, 3♀♀, coll. N. NUNOMURA, Sep. 19, 1980; Hamakurosaki, 1♂, 7♀♀, coll. N. NUNOMURA, Nov. 11, 1980; Uchiide, 1♀, coll. N. NUNOMURA, Aug. 24, 1978; off Ogi 6♀♀, coll. N. NUNOMURA, June 26, 1984.

#### *Cirolana toyamaensis* NUNOMURA, 1982

*Cirolana toyamaensis* NUNOMURA, 1982.

*Material examined.* Off Yoshihara, 4♂♂, 3♀♀, coll. H. AKAHANE, Aug. 11, 1983.

#### Genus *Excirolana* RICHARDSON, 1912

#### *Excirolana chiltoni* RICHARDSON, 1912

*Cirolana chiltoni* RICHARDSON, 1905

*Cirolana chiltoni japonica*: THIELEMANN, 1910.

*Excirolana chiltoni*: RICHARDSON, 1912; MONOD, 1930; SCHULTZ, 1969; BRUCE & JONES, 1981.

*Excirolana japonica*: RICHARDSON, 1912; MONOD, 1930; KUSSAKIN, 1955.

*Cirolana chiltoni* var. *vancouverensis*: FEE, 1927; SCHULTZ, 1969.

*Excirolana (pontogeroide) japonica*: SHIINO, 1965.

*Excirolana kincardi*: SCHULTZ, 1969; MONOD, 1976.

*Material examined.* Hamakurosaki, 2♀♀, coll. N. NUNOMURA, Oct. 16, 1980; Hamakurosaki, 5♀♀, coll. N. NUNOMURA, May 29, 1983; Hamakurosaki, 1♀, coll. N. NUNOMURA, May 14, 1984; Iwase,

4♀♀, coll. N. NUNOMURA, May 29, 1977; Amaharashi, 4♀♀, coll. N. NUNOMURA, Sep. 26, 1976; Amaharashi, 1♂, 2♀♀, coll. N. NUNOMURA, Sep. 21, 1977; Amaharashi, 1♀, coll. N. NUNOMURA, July, 12, 1981; Amaharashi, 3♀♀, coll. N. NUNOMURA, Zug. 2, 1982; Matsudaehama, 3♀♀, coll. N. NUNOMURA, June 6, 1977; Shimao, 3♀♀, coll. N. NUNOMURA, July 29, 1978; Shimao, 1♂, 2♀♀, coll. N. NUNOMURA, July 27, 1984; Yatsugasaki, 1♂, coll. N. NUNOMURA, June 30, 1984; Hane, 11♂♂, 14♀♀, coll. N. NUNOMURA, June 2, 1984.

### Family C y m o t h o i d a e

#### Genus *Nerocila* LEACH, 1818

##### *Nerocila acuminata* SCHIOEDTE et MEINERT, 1881

*Nerocila acuminata* SCHIOEDTE & MEINERT, 1881; RICHARDSON, 1900, 1905; BRUSCA, 1978; WILLIAMS & WILLIAMS, 1978; KUSSAKIN, 1979; BRUSCA, 1981.

*Nerocila californica*: SCHIOEDTE & MEINERT, 1881; RICHARDSON, 1899, 1905; HALE, 1926; GURJANOVA, 1936; KUSSAKIN, 1979.

*Material examined.* Kokufu, 1♀, coll. S. TANAKA, June 9, 1974; Ao, 1♀, from *Acanthogobius flavimanus* (TEMMINCK & SCHLEGEL), coll. Toyama Fish Exp. Sta., Sep. 18, 1979.

#### Genus *Rhexanella* STEBBING, 1911

##### *Rhexanella verrucosa* (SCHIOEDTE et MEINERT, 1883)

*Rhexana verrucosa* SCHIOEDTE & MEINERT, 1883; THIELEMANN; HIRAIWA, 1934.

*Rhexanella verrucosa*: NIERSTRASZ, 1941; SHIINO, 1951; 1965.

*Material examined.* Mizuhashi, 1♀, coll. N. NUNOMURA, Oct. 17, 1978; off Iwase, 1♂, 1♀, coll. M. AKASE, Aug. 1982; from *Pagurus major* (TEMMINCK & SCHLEGEL) caught off Shinminato, 1♂, 1♀, Mar. 21, 1981; Himi, 1♀, coll. H. NAMBU, Sep. 23, 1979.

#### Genus *Aegathoa* DANA, 1852

##### *Aegathoa* sp.

*Material examined.* Ao, 1 ex, coll. Toyama Fish. Exp. Sta., Sep. 18, 1979.

#### Genus *Lironeca* LEACH, 1818

##### *Lironeca* aff. *sacciger* RICHARDSON, 1907

*Material examined.* Himi, 1♀, coll. N. NUNOMURA, Apr. 18, 1979.

#### Genus *Mothocya* COSTA, 1851

##### *Mothocya* sp.

*Material examined.* Horioka, 3 exs, coll. H. KURODA, Oct. 17, 1983.

## Family Sphaeromatidae

Genus *Sphaeroma* LATREILLE, 1802*Sphaeroma sieboldii* DOLLFUS, 1899

*Sphaeroma sieboldii* DOLLFUS, 1899; RICHARDSON, 1909; TERA0, 1916; NIERSTRASZ, 1917; SHIINO, 1957, 1965.

*Material examined.* Nakanami, 1♂, 1♀, 5 young, coll. N. NUNOMURA, July 27, 1978.

Genus *Gnorimosphaeroma* MENZIES, 1954*Gnorimosphaeroma rayi* HOESTLANDT, 1969

*Exosphaeroma oregonensis* THIELEMANN, 1910; SHIINO, 1960.

*Neosphaeroma oregonensis*: GURJANOVA, 1936; IWASA, 1947.

*Gnorimosphaeroma rayi*: HOESTLANDT, 1969, 1973, 1975.

? *Exosphaeroma oregonensis*: TATTERSAL, 1925; UENO, 1936.

*Material examined.* Miyazaki, 1♀, coll. N. NUNOMURA, Sep. 2, 1982; Kyoden, 3 youngs, coll. N. NUNOMURA, July 2, 1984; Mizuhashi, 1♂♂, 2♀♀, coll. H. KURODA, Oct. 18, 1982; mouth of Joganji River, 1♂, 5♀♀, coll. N. NUNOMURA, May 19, 1980; Iwase, 1♂, 2♀♀, coll. N. NUNOMURA, June 21, 1982; Yokata, 2♂♂, 6♀♀, coll. N. NUNOMURA, June 3, 1981; Uchiide, 1♂, 3♀♀, coll. N. NUNOMURA, June 3, 1981; Amaharashi, 3♂♂, 2♀♀, coll. N. NUNOMURA, Apr. 17, 1981; Amaharashi, 2♀♀, coll. N. NUNOMURA, May 17, 1984; Iwaguruma, 1♀, coll. N. NUNOMURA, June 25, 1984; Kurosaki, 1♀, coll. N. NUNOMURA, Aug. 19, 1984.

Genus *Cymodoce* LEACH, 1814.*Cymodoce acuta* RICHARDSON, 1904

*Cymodoce acuta* RICHARDSON, 1904; GURJANOVA, 1936; KUSSAKIN, 1974, 1979.

*Cymodoce japonica*: RICHARDSON, 1907; THIELEMANN, 1910; GURJANOVA, 1936; SHIINO, 1944, 1957, 1965; HATCH, 1947.

*Cymodoce affinis*: RICHARDSON, 1907.

*Material examined.* Off Hamakurosaki, 2♂♂, 7♀♀, coll. Toyama Fish. Exp. Sta., Aug. 1979; Amaharashi, 1♂, 2♀♀, coll. N. NUNOMURA, Aug. 8, 1978; Ao, 1♀, coll. Toyama Fish. Exp. Sta., Aug. 13, 1979; Unami, 1♂, coll. N. HORII, Aug. 18, 1984; Oosakai, 6♀♀, coll. N. NUNOMURA, Sep. 6, 1982; Kurosaki 1♀, coll. N. NUNOMURA, Aug. 22, 1982; Kinoura, 1♀, coll. N. NUNOMURA, June 29, 1984; off Ogi, 1♂, coll. N. NUNOMURA, June 26, 1984; Tsukumo Bay, 3♀♀, coll. N. NUNOMURA, June 26, 1984; Mitsuke, 4♂♂, 7♀♀, coll. N. NUNOMURA, June 18, 1984.

Genus *Holotelson* RICHARDSON, 1909*Holotelson tuberculatus* RICHARDSON, 1909

*Holotelson tuberculatus* RICHARDSON, 1909; SHEN, 1933; GURJANOVA, 1936; KUSSAKIN, 1956, 1979, SHIINO, 1965.

*Material examined.* Amaharashi, 3♂♂, 2♀♀, coll. N. NUNOMURA; Amaharashi, 1♂, coll. N. NUNOMURA, Aug. 19, 1984; Nakadomari, 1♂, 1♀, coll. N. NUNOMURA.

***Holotelson decoratus* NUNOMURA, 1985**

*Holotelson decoratus* NUNOMURA, 1985.

*Material examined.* Off Ogi, 3♂♂, coll. N. NUNOMURA, June 26, 1984.

Genus *Dynoides* SHEN, 1929

***Dynoides dentisinus* SHEN, 1929**

*Dynoides dentisinus* SHEN, 1929; KUSSAKIN, 1956, 1974, 1979; SHIINO, 1957, 1965.

*Material examined.* Miyazaki, 1♂, 2♀♀, coll. N. NUNOMURA, Sep. 2, 1982; Yoshihara, 1♂, 2♀♀, coll. N. NUNOMURA, Sep. 21, 1983; Ashiarai, 2♂♂, 1♀, coll. H. KURODA, Aug. 17, 1984; Ebie, 3♀♀, coll. N. NUNOMURA, July 3, 1984; Fushiki, 1♀, coll. N. NUNOMURA, July 22, 1983; Amaharashi, 1♂, coll. N. NUNOMURA, Apr. 17, 1981; Magari 1♀, coll. N. NUNOMURA, June 30, 1984; Iwaguruma, 1♀, coll. N. NUNOMURA, June 25, 1984; Kagata-hana, 4 young, coll. N. NUNOMURA, June 25, 1985; Mawaki, 4 youngs, coll. N. NUNOMURA, June 27, 1984; Mitsuke, 4♀♀, coll. N. NUNOMURA, 1984.

Genus *Leptosphaeroma* HILGENDORF, 1885

***Leptosphaeroma gottschei* HILGENDORF, 1885**

*Leptosphaeroma gottschei* HILGENDORF, 1885; NISHIMURA, 1976.

*Material examined.* Sugata, 2♂♂, 4♀♀, coll. N. NUNOMURA, Sep. 6, 1982; Kurosaki, 1♂, coll. N. NUNOMURA, Sep. 1, 1981; Kurosaki, 2♂♂, 2♀♀, coll. N. NUNOMURA, Aug. 22, 1982; Magari, 8♂♂, coll. N. NUNOMURA, June 30, 1984; Fujinami, 1♀, coll. N. NUNOMURA, June 27, 1984.

Suborder Oniscoidea

Family Tylidae

Genus *Tylos* AUDOUIN, 1826

***Tylos granuriferus* BUDDE-LUND, 1885**

*Material examined.* Hamakurosaki, coll. N. NUNOMURA, Oct. 20, 1978; Shima, 5exs, coll. N. NUNOMURA, June 3, 1984; Hane, 12 exs, coll. N. NUNOMURA, June 27, 1984.

Family Ligidae

Genus *Ligia* FABRICIUS, 1778

***Ligia exotica* ROUX, 1828**

*Ligia exotica* ROUX, 1828; BUDDE-LUND, 1885; DOLLFUS, 1893; RICHARDSON, 1899, 1900, 1905;

JACKSON, 1922; ARCANGELI, 1927; SHIINO, 1965; NUNOMURA, 1983.

*Ligia grandis*: PERTY, 1830.

*Ligia grandichaudii*: MILNE EDWARDS, 1840.

*Ligia italica coriacea*: KOCH, 1853–1844.

*Material examined.* Iwase, 1♂, coll. N. NUNOMURA, Aug. 6, 1980; Amaharashi, 2♂♂, coll. N. NUNOMURA, June 29, 1978; Amaharashi, 1♀, coll. N. NUNOMURA, June 7, 1981; Nakanami, 1♀, coll. N. NUNOMURA, July 28, 1978; Kurosaki, 1♀, coll. N. NUNOMURA, Sep. 2, 1980; Kurosaki, 1♂, 3♀♀, coll. N. NUNOMURA, Sep. 1, 1981; Kurosaki, 1♂, coll. N. NUNOMURA, Aug. 22, 1982; Ogi, 1♂, 4♀♀, coll. N. NUNOMURA, June 11, 1978.

### Family Scyphacidae

Genus *Armadilloniscus* ULJANIN, 1875

*Armadilloniscus japonicus* NUNOMURA, 1984

*Armadilloniscus japonicus* NUNOMURA 1984.

*Material examined.* Kyoden, 8 exs, coll. N. NUNOMURA, July 2, 1984; Yatsugasaki, 15 exs, coll. N. NUNOMURA, June 30, 1984.

Genus *Alloniscus* DANA, 1856

*Alloniscus balssi* (VERHOEFF, 1928)

*Japanoniscus balssi* VERHOEFF, 1928.

*Alloniscus balssi*: ARCANGELY, 1965.

?*Alloniscus perconvexus*: SHIINO, 1965.

*Material examined.* Kokubu, 10 exs, coll. N. NUNOMURA, May 3, 1976; Oosakai, 3 exs, coll. K. KAZUI, May 18, 1979.

### Family Oniscidae

Genus *Exalloniscus* STEEBING, 1911

*Exalloniscus cortii* ARCANGELI, 1927

*Exalloniscus cortii* ARCANGELI, 1927; NUNOMURA, 1980.

*Material examined.* Hikatae, near Hamakurosaki, 2♂♂, coll. N. NUNOMURA.

### Family Porcellionidae

Genus *Porcellio* LATREILLE, 1804

*Porcellio scaber* LATREILLE, 1804

*Porcellio scaber* LATREILLE; Budde LUND, 1885; HILGENDORF, 1893.  
For further synonymy, see FERRARA & TAITI, 1979.



*Material examined:* Hamakurosaki, 26♂♂, 14♀♀, coll. N. NUNOMURA, Oct. 20, 1978.

***Porcellio toyamaensis* NUNOMURA, 1980**

*Porcellio toyamaensis* NUNOMURA, 1980.

*Material examined.* Hamakurosaki, 2♂♂, 5♀♀, coll. N. NUNOMURA, Feb. 7, 1979.

**Zoogeography**

Of 27 recorded purely marine isopod crustaceans, the distributions of respective species are geographically grouped as follows.

1. Cosmopolitan species or almost worldwide distributed species

*Idotea metallica* BOSC and *Nerocila acuminata* SCIOEDTE et MEINERT.

As the former species lives mainly in the floating sea weeds and can be transferred together with sea weeds, it may have worldwide distribution area. The latter species attaches to many fishes which have large migration power, so it achieved to have worldwide distribution.

2. Widely distributed in North Pacific species

*Excilorana chiltoni* RICHARDSON.

3. Warm temperate East Pacific species

*Cymodoce acuta* RICHARDSON, *Holotelson tuberculatus* RICHARDSON, *Dynoides dentisinus* SHEN, *Gnorimosphaeroma rayi* HOESTLANDT.

These species belong all to the Family Sphaeromatidae.

4. Temperate-water species distributed in Japanese and her adjacent waters

*Paranthura japonica* RICHARDSON, *Synisoma pacificum* NUNOMURA, *Synidotea laevidorsalis* (MIERS), *Cleantis planicauda* BENEDICT, *Cleantiella isopus* (GRUBE), *Cleantiella strasseni* THIELEMANN, *Cirolana harfordi japonica* THIELEMANN, *Rhexanella verrucosa* (SCHIOEDTE et MEINERT), *Sphaeroma sieboldii* DOLLFUS, *Leptosphaeroma gottschei* HILGENDORF.

5. Endemically limited to the Japan Sea species

*Cirolana toyamaensis* NUNOMURA, *Euidotea ocellata* NUNOMURA, *Holotelson decoratus* NUNOMURA, *Mesanthura atrata* n. sp., *Paridotea robusta* n. sp., *Synidotea nipponensis* n. sp. and *Ianiropsis notoensis* n. sp.

As a whole, cold water species could not be collected and many of species reported here seem to be temperate or warm-temperate species. This fact may be attributed to the Tsushima Current—a branch of the Kuroshio, which is influencing to Toyama Bay, especially to the shallow water of the bay.

**要 約**

富山湾を含め、日本海沿岸の等脚目甲殻類の分類学的研究は、新潟県佐渡島からの本間・北見(1978)およびNUNOMURA(1981)等の報告があるにすぎない。

今回の海産等脚目相の調査は、1984年6月から7月にかけて、富山県朝日町から石川県珠洲市に至る富山湾沿岸海域でなされ、各調査地点では磯採集を主体としたが、いくつかの地点では素潜りによる採集を併用した。また、石川県内浦町小木の九十九湾および小木沖ではドレッジ採集も行った。

さらに、1976 年以来、主として筆者によって収集されてきた富山市科学文化センター所蔵の富山湾産等脚目標本も調査した。

その結果、29 属 34 種が認められ、そのなかには 4 新種、*Mesanthura atrata* (和名：スミイロウミナナフシ)、*Paridotea robusta* (和多：モノノフヘラムシ)、*Synidotea nipponensis* (和名：ニッポンワラジヘラムシ)、*Ianiropsis notoensis* (和名：アリソウミズムシ) が含まれる。なお、*Paridotea* 属は、現在まで、日本およびその近海から知られていなかったものである。

今回報告された等脚目のうち、純海産種は 27 種であり、そのうち、流れ藻に付着して生活する *Idotea metallica* (ナガレモヘラムシ) および諸種の回遊魚に付着する *Nerocila acuminata* (ウオノコバン) は世界共通種であり、*Excirrolana chiltoni* (ヒメスナホリムシ) は太平洋兩岸の暖・温帯に広く分布し、*Cymodoce acuta* (ニホンコツブムシ)、*Holotelson tuberculatus* (チビウミセミ)、*Dynoides dentisinus* (シリケンウミセミ)、*Gnorimosphaeroma rayi* (イソコツブムシ) の 4 種が、日本を含む西太平洋海域にかなり広く分布しており、*Paranthura japonica* (ヤマトウミナナフシ)、*Synisoma pacificum* (クロシオナガヘラムシ)、*Synidotea laevidorsalis* (ワラジヘラムシ)、*Cleantis planicauda* (ホソヘラムシ)、*Cleantiella isopus* (イソヘラムシ)、*Cleantiella strasseni* (オヒラキヘラムシ)、*Cirolana harfordi japonica* (ニセスナホリムシ)、*Rhexanella verrucosa* (タイノエ)、*Sphaeroma sieboldii* (ナナツバコツブムシ)、*Leptosphaeroma gottschei* (ヒラタウミセミ) の 10 種は、日本の太平洋側ならびに日本海側および日本近海に分布しており、*Cirolana toyamaensis* (トヤマスナホリムシ) *Euidotea ocellata* (オオメヘラムシ)、*Holotelson decoratus* (カザリウミセミ) の 3 種に、今回、新種として記載した 4 種を加えた計 7 種が、現在のところ日本海側からだけ知られている。また、寒流系の種は見られなかった。

なお、ワラジムシ亜目に属する 7 種のうち 3 種は、海浜域以外に分布の中心をもつものであり、もっぱら海浜域にのみ生息する 4 種のうち、*Ligia exotica* (フナムシ) は世界共通種であり、*Armadilloniscus japonicus* (ニホンハマワラジムシ) および *Alloniscus balssi* (ニホンタマワラジムシ) は日本固有種と考えられる。また、*Tylos granuliferus* (ハマダンゴムシ) は日本およびボルネオから報告されている。

今回の調査では暖流系要素と考えられる種が多く得られたが、これは対馬暖流の影響を強く受けているためと考えられる。また、富山湾沿岸海域の等脚類相は新潟県佐渡島の等脚類相と概ね一致していた。

## References

- BENEDICT, J.E., 1897. A revision of the Genus *Synidotea*. *Proc. Acad. nat. Sci. Philadelphia*, 53: 389-404.
- COLLINGE, W.E., 1917. A revision of the British Idoteidae, a family of marine Isopoda. *Trans. R. Soc. Edinb.*, 51: 721-760.
- FERRARA, F., & S. TAITI, 1979. A checklist of terrestrial isopods from Africa (South of the Sahara). *Monitore zool. ital.*, (n.s.), Suppl., 12: 89-215.
- GURJANOVA, E.F., 1950. On the fauna of Isopoda from the Pacific Ocean, 5. Isopoda collected by Kamchatka Marine Station of the Hydrobiological Institute Explor. *Far Eastern Seas USSR*, 2: 281-292. (In Russian.)
- GURJANOVA, E.F., 1955. On the fauna of Isopod from the Pacific Ocean, 6. New species of Valvifera from Kuril-Sakhalin Region. *Trud. zool. Inst. Akad. Nauk. USSR.*, 21: 208-227. (In Russian.)
- HONMA, Y., & T. KITAMI, 1978. Fauna and Flora in the Waters Adjacent to the Sado Marine Biological Station, Niigata University. *Ann. Rep. Sado mar. biol. Sta., Niigata Univ.*, 8: 7-81.
- KENSLEY, B., 1978. Guide to the Marine Isopods of Southern Africa. Cape Town: South African Museum.
- KUSSAKIN, O.G., 1955. On the problem of some systematic aspects *Idotea* Fabr. (Isopoda, Valvifera) in the Far Eastern Sea of USSR. *Trud. Zool. Inst. Akad. Nauk.*, 13: 219-227. (In Russian.)
- KUSSAKIN, O.G., 1979. Marine and brackish water Isopoda of the cold and temperate waters of the

- Northern Hemisphere, Suborder Flabellifera. *Opredelitili po Faune SSSR*, 122: 1-470. (In Russian.)
- MENZIES, R.J., & M.A. MILLER, 1972. Systematics and zoogeography of the genus *Synidotea* (Crustacea: Isopoda) with an account of Californian Species. *Smiths. Contr. Zool.*, 102: 1-33
- MIERS, E.J., 1881. Revision of the Idoteidae, a family of sessile eyed Crustacea. *J. Linn. Soc. London, Zool.*, 16: 1-88.
- NAYLOR, E., 1955. The comparative external morphology and revised taxonomy of the British species of *Idotea*. *J. mar. biol. Ass. U.K.*, 34: 467-493.
- NUNOMURA, N., 1974. Marine Isopod from the Coast of Hikigawa Town, Kii Peninsula, Middle Japan (1). *Bull. Osaka Mus. nat. Hist.*, 28: 1-12.
- NUNOMURA, N., 1977. Marine Isopoda from Amakusa, Kyushu (1). *Publ. Amakusa mar. biol. Lab.*, 4: 71-90.
- NUNOMURA, N., 1981. Isopod Crustaceans from Sado Island in the Sea of Japan. *Ann. Rep. Sado mar. biol. Sta., Niigata Univ.*, 11: 43-62.
- NUNOMURA, N., & K. IKEHARA, 1985. Some Isopod Crustaceans collected in the middle coastal area of the Japan Sea. *Bull. Toyama Sci. Mus.*, 7: 51-69.
- RICHARDSON, H., 1905. Monograph of the Isopoda of North America. *Bull. U.S. nat. Mus.*, 54: 1-727.
- RICHARDSON, H., 1909. Isopod collected in the northmost Pacific by the U.S. Bureau of Fisheries Steamer "Albatross" in 1906. *Proc. U.S. Nat. Mus.*, 37: 75-121.
- SHIINO, S.M., 1965. New Illustrated Encyclopedia of the Fauna of Japan, 2. Hokuryukan. (In Japanese.)
- SCHULTZ, G.A., 1969. How to know the Marine Isopod Crustaceans. W.M.C. Brown, Iowa.
- THIELEMANN, M., 1910. Beiträge zur Kenntnis der Isopoden fauna Ostasiens. *Abhandl. Wiss., Suppl.*, 3: 1-109.